

A SELF-SERVICE SYSTEM FOR ESTIMATING HUNTER USAGE AND HARVEST ON MANAGEMENT AREAS IN MISSISSIPPI¹

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Abstract: A self-service daily recreational permit was developed and tested on 6 Wildlife Management Areas in Mississippi during the 1976-77 season. The permit system provides data on hunter usage and harvest by species and day of the season, the effective area served by management units, and an indication of economic importance of recreational opportunities. The utility of the system is illustrated with data for deer hunting on the Issaquena Wildlife Management Area. These data should aid greatly in the formulation of management decisions and allocation of agency resources.

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In recent years there has been general acceptance that the wildlife management profession is involved in the management of people, land and wildlife components (Hendee and Schoenfeld 1973). To manipulate this complex man-land-animal triad, wildlife agencies need specific information on each of these components for input into managerial decision making and for evaluating the effectiveness and efficiency of their managerial efforts. The acquisition of this information is often difficult and costly and, thus, managers infrequently enjoy the luxury of possessing all of the information desired for managerial actions.

A problem of particular concern to game management agencies is that of how to most effectively and efficiently acquire information on hunter use and game harvest on public hunting areas. Lund (1968) conducted a survey of state wildlife management agencies to determine game harvest reporting systems. Mandatory check stations, mail questionnaires and post-paid report card systems were the 3 most frequently used systems. These provide the agencies with harvest data but are often costly and yield limited information on hunter usage characteristics.

In Mississippi, hunter usage and harvest data were collected on public wildlife management areas (WMA) by manned check-in and check-out stations from 1952 to 1972. This system was abandoned because the associated labor costs became prohibitive. The system was replaced with unmanned check stations which required hunters to sign-in and sign-out on a log book at the headquarters of each WMA. Both of these systems were unpopular with sportsmen because of travel inconveniences and frequent encounters with long waiting lines while checking in and out. Because of public dissatisfaction, the latter system provided information of questionable reliability and usefulness.

Because of these problems, a new system involving a self-service daily recreational permit was developed and tested at selected Mississippi Wildlife Management Areas during the 1976-77 deer hunting season. Results of this trial and potential application of this system for use by state wildlife agencies are discussed.

METHODS

Self-service recreational permit dispensing stations were constructed on 6 WMAs in Mississippi. The stations were conveniently located at all major entrance and exit routes on each WMA. Boxes for depositing permits at the end of the day were also provided at these stations. This allowed sportsmen to check in and out without excessive waiting time. The permit was a short questionnaire which provided the following information: hunter's home address, whether or not this was his first trip to the management area this year, species hunted, daily bag and number of deer crippled but not retrieved (Fig. 1). As discussed by Erdos (1970), check questions were used to reduce the amount of required writing, increase ease of answering questions and minimize the time required to complete the permit. Upon entering the area, hunters were required to obtain a permit. The permit was to be displayed on the dash of the vehicle while the hunter was afield and the completed permit deposited at one of the self-service stations when

Table 1. Deer hunter usage and harvest for the 1976-77 hunting season on the Issaquena WMA, Mississippi.

Season	Harvest		Crippling Loss		Total Days Hunted
	Buck	Doe	Buck	Doe	
First Firearms Nov. 18-Dec. 1, 1976	28	0	2	0	672
Primitive Weapons Dec. 4-15, 1976	5	15	0	1	248
Second Firearms Dec. 18, 1976- Jan. 15, 1977	9	0	0	0	350
Date Unknown	6	4	1	0	695
Total	48	19	3	1	1,965

Table 2. Deer hunter visits originating at various distances from the Issaquena WMA, Mississippi during the 1976-77 seasons.

Distance Traveled (Km)	Hunter Visits	Distance Traveled (Km)	Hunter Visits
0-30	9	241-320	18
31-62	489	321-400	8
63-95	1,161	401-481	0
96-127	225	482-642	4
128-159	14	643-803	0
160-240	16	804-964	1

on Issaquena WMA. This represented a conservative estimate of hunter numbers as 597 permits were returned without indicating whether or not it was their first day to hunt the area. Hunters harvested a total of 48 bucks, 19 does and reported crippling 4 deer. Further analysis of the data provided hunter usage and harvest by day of the season. This information for the first firearms season (1976-77) on Issaquena WMA is presented in Fig. 2. Information presented in this manner provides a decision making tool for such purposes as the deployment of law enforcement personnel, and for determining what days of the season it will be most effective and cost efficient to establish special check stations for collecting biological data. For example, it can be seen that hunter density was 1 hunter per 5 ha on the opening day of the season and that 1 buck per 60 ha was harvested (Fig. 2).

The daily permit provides the residence of each hunter and allows the area served by the WMA to be determined. This is of particular interest in the case of the Issaquena WMA since the population of Issaquena County was less than 3,000 in 1970 (Cross and Wales 1974). Approximately 95 percent of all visits originated within a 129 km radius of Issaquena WMA. The average distance traveled by deer hunters to the area was approximately 82 km and ranged from 22.5 km to 925 km. Hunters from Louisiana, Kentucky, Mississippi and Texas hunted the area during the 1976-77 season.

This type of data can be extremely useful in managerial decisions. Hunter mandays and distance traveled provide a means of evaluating individual demand and recreational value of a given management area. This can be used in establishing priorities for resource allocation and for evaluating the need for additional land acquisition within the area served. For example, if it is assumed that the majority of the hunter days spent on Issaquena WMA represent 1 day trips to the area, that the average hunter rode with 1 companion, and that transportation costs are approximately 10 cents per km, deer hunters spent approximately \$8,056.50 in transportation costs to hunt Issaquena WMA. This places a minimum value on each deer harvested at \$120.25, not including other costs to the sportsmen such as equipment, license fees and other expenses associated with the sport.

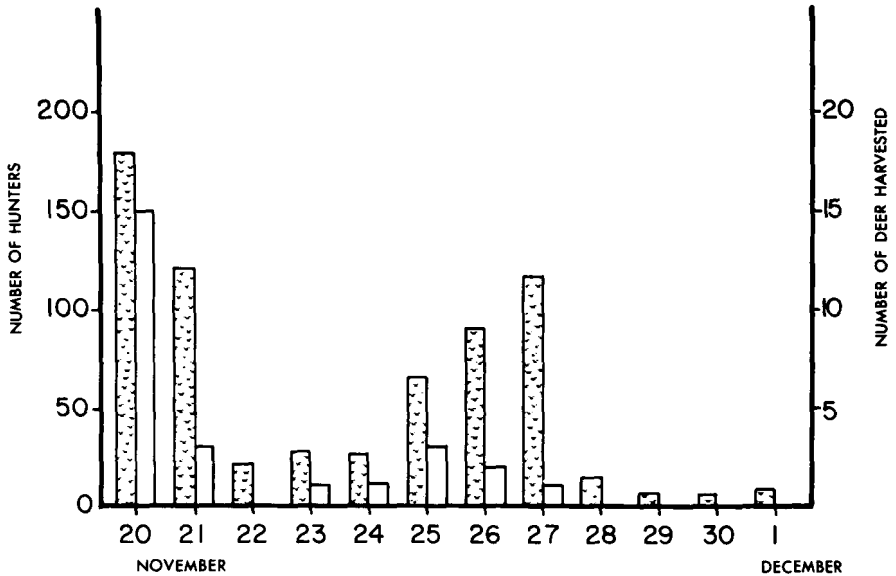


Fig. 2. Deer hunter usage and harvest by day for the First Firearm Season (1976 - 77) on the Issaquena WMA, Mississippi.

CONCLUSIONS

The daily recreational permit system developed for use on Wildlife Management Areas in Mississippi provides an economical, effective and efficient means of determining hunter usage and hunter harvest. The system is convenient for both sportsmen and agency personnel. Reliable estimates of hunter usage and harvest by date and species can be obtained. The effective area served by a WMA and a conservative estimate of the relative value of the area and its wildlife resources can be determined from the resulting data. These considerations are of prime importance in many management decisions such as season lengths, bag limits, agency personnel and resource assignments, number of permittees and evaluation of land acquisition programs.

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